THE DISCLOSURE COST OF SEC REGISTRATION AND MARKET UNRAVELING: EVIDENCE FROM RULE 144A AND YANKEE BOND ISSUES

A Dissertation

by

ANDREW STEPHEN MCMARTIN

Submitted to the Office of Graduate and Professional Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Chair of Committee,	Anwer Ahmed
Committee Members,	Senyo Tse
	Korok Ray
	Christa Bouwman
Head of Department,	James Benjamin

August 2016

Major Subject: Accounting

ABSTRACT

I examine the consequences of SEC disclosure regulation in the U.S. market for foreign bonds, where firms can choose to register their issues with the SEC, known as "Yankee" bonds, or avoid registration using SEC Rule 144A. I use a recent rule change that allows firms to use IFRS financial statements without reconciliation to U.S. GAAP as an exogenous reduction in the disclosure costs of registration, and find that foreign firms are more likely to register their bond issues with the SEC after the change. More importantly, I find that investors react more negatively to Rule 144A placements following the rule change, as evidenced by higher cost of debt and lower credit ratings. The results reconcile to theoretical predictions from the Unraveling Hypothesis about how both firms and investors react to a decrease in disclosure costs. The study contributes to our understanding of how disclosure regulation affects foreign firm financing decisions in the United States, in particular the decision to register with the SEC.

ACKNOWLEDGMENTS

I am deeply grateful to the members of my committee: Anwer Ahmed (chair) Christa Bouwman, Korok Ray, and Senyo Tse. I am also very grateful to Adam Kolasinki, James Nordlund, Rahul Vashishtha, Wei Wu, and workshop participants at the 2016 FARS Conference, Arizona State University, Boston College, University at Buffalo, Temple University, Texas A&M University, University of Connecticut, University of Texas at Dallas, and the University of Miami for many helpful comments and conversations. All errors remain my own.

TABLE OF CONTENTS

Page

LIST OF FIGURES

FIGURE Page

LIST OF TABLES

TABLE Page

1. INTRODUCTION

How disclosure regulation affects both firm and investor behavior is an important and ongoing question in accounting research (Leuz and Wysocki, 2008). Disclosure regulation can improve the information provided to investors, but at a cost to the transmitting firm. Alternatively, firms can avoid disclosure regulation and issue in the private market, but suffer an informational disadvantage. An underexplored question in the accounting literature is how changes in disclosure regulation affect both the firms choice to participate in public versus private markets, and the associated capital market consequences.

This paper investigates how disclosure regulation affects foreign firms choice to register with the SEC when they issue a bond in the United States. Specifically, I exploit a recent rule change that allows foreign firms to register with the SEC without reconciling their financial statements to U.S. GAAP if they report using IFRS as a plausibly exogenous reduction in the disclosure costs of accessing the U.S. public debt markets. The requirement to reconcile to U.S. GAAP requires lengthy footnotes that accompany a firm's home country financial statements. Foreign firms could avoid these disclosures by issuing their bond in the U.S. private market, which is exempt from SEC registration or reporting requirements. On November 15, 2007, the SEC removed the reconciliation requirement for firms using IFRS, which significantly reduced the number of disclosures required to register a bond issue, at least for a subset of foreign firms.

The U.S. market for foreign bonds is an advantageous setting within which to study the consequences of disclosure regulation for several reasons. First, not all foreign bonds issued in the U.S. are registered with the SEC, as registration is a

choice of the issuing firm. Registered foreign bonds, which are known as "Yankee" bonds, are allowed to trade on a public exchange, while unregistered bonds, which are allowed under SEC Rule 144A, trade only amongst Qualified Institutional Buyers (QIB). Thus, disclosure regulation could affect a firm's choice to register the bond, and consequently which market the bond trades in. Second, bond issues represent a clear attempt at raising capital, unlike cross-listed equity, which can be motivated by reasons other than obtaining financing (Reese and Weisbach, 2002). Thus, the capital market consequences of disclosure regulation might be more apparent within the bond market than in the equity markets. Third, the cost of debt capital is more clearly observed compared to equity issues, where the cost of equity capital must be estimated. Finally, studying foreign issues in the U.S. provides a single homogeneous market within which to study the consequences of accounting rule changes in other countries.[1] Taken together, this market represents an interesting and economically important setting within which to examine the capital market consequences of disclosure regulation.

There are many reasons why foreign firms should want to register their bonds with the SEC. Registration is associated with better investor protections (Reese and Weisbach, 2002), lower cost of capital (Chaplinsky and Ramchand, 2004; Hail and Leuz, 2009), and greater firm value (Doidge et al., 2004). But SEC registration is costly. Foreign firms cite the increased burden of additional disclosure as one of the most significant costs of registration (Licht, 2003; Latham & Watkins LLP, 2013). As a result, a large percentage of foreign firms avoid these disclosure requirements by issuing into the Rule 144A market.

[1]This last advantage contrasts with the majority of studies that examine the capital market consequences of accounting standard changes in home-country markets, which are often confounded by corresponding changes in country-level enforcement mechanisms (Hail and Leuz, 2007; Christensen et al., 2013; Barth and Israeli, 2013).

The claim that firms will use Rule 144A to avoid disclosures is interesting, because investors could interpret this decision as an attempt to hide bad news. To explain this, I borrow arguments from the voluntary disclosure literature, which predict that investors react negatively to withheld disclose, and that this negative reaction in turn motivates firms to disclose more (Grossman and Hart, 1980; Grossman, 1981; Milgrom, 1981). On the other hand, when disclosures are costly, investors understand that some firms withhold disclosures, not because they are hiding bad news, but because they want to avoid the disclosure costs (Verrecchia, 1983). Therefore, investors will understand that some firms with good news will use Rule 144A only to avoid the disclosure costs of SEC registration. If removing the requirement to reconcile to U.S. GAAP reduced the disclosure costs of SEC registration, then more firms should register with the SEC, and investors will react more negatively to Rule 144A placements.

The theoretical argument predicts more than just a separation in the market. The theory predicts the counterfactual outcome had firms issued into the Rule 144A market: investors would infer with greater likelihood that the issuing firm is hiding bad news, and so punish them accordingly. This (unobserved) counterfactual outcome can be thought of as predicting investors reactions off the equilibrium path that support the realized separation in the market.[2]

Two significant issues face empirical estimation of the predicted consequences of the rule change. The first is that firm-level information is not available for the vast majority of the foreign bonds issued into the United States. For example, not all foreign firms in my sample publicly disclose their financial information even in their home country. I am especially averse to dropping observations with missing

[2]The Game Theory literature often uses the notion of player's reaction "off the equilibrium path", which is used to support a separating equilibrium.

data, since the crux of the paper is to study the consequences of withheld disclosure. Rather than drop observations due to missing firm level data, I instead exploit plausibly exogenous variation in the issuing firms home countrys financial reporting requirements. Using country level variation in reporting requirements avoids the interpretation of missing firm-level data as a potential confound.

The second issue arises when estimating the (unobserved) counterfactual outcome had foreign firms issued their bonds into the Rule 144A market following the rule change in that firms endogenously select which market to issue into. Ideally, we would like to observe the same bond issued simultaneously issued into both the Rule 144A and Yankee bond markets, both before and after the reporting rule change, and compare the outcomes. Instead, the research design must carefully consider the endogeneity issue that arises when the market choice is also affected by the rule change.

To examine how firms reacted to the SEC rule change, I use country-level adoption of mandatory IFRS and the recent SEC rule change as sources of exogenous variation in disclosure and reporting requirements. Using a difference-in-difference-in-differences (DDD) design, I find that firms from countries with mandatory IFRS reporting are significantly more likely to register their bond following the SEC rule change. Cross sectional results suggest that the rule change increased the probability of registration most significantly amongst those bonds issued from countries with already strong legal and enforcement mechanisms.

To test investors' predicted reaction to the withholding of disclosure following a decrease in disclosure costs, I examine the cost of debt and credit ratings available in both markets following the rule change. I use a switching model in to address the problem that arises when firms endogenously choose which market to issue into. I find that the SEC rule change increased the cost of capital and decreased credit

ratings available in the Rule 144A market, but did not affect either outcome available in the Yankee bond market.[3] The latter finding of no effect in the public market is consistent with existing studies that examine cross-listed equities (Kim et al., 2012), and suggests that removing the requirement to report or reconcile to U.S. GAAP did not detrimentally affect registered firms. The former finding of an effect on unregistered bonds is unique to this paper, and demonstrates how regulation that reduces the cost of disclosure in the public markets can 'unravel' the market for unregistered securities.

This paper makes several contributions to the literature. First, this paper contributes to our understanding of the U.S. market for foreign bonds, which – due to it's unique institutional and reporting requirements – is an understudied topic within the accounting literature. Only a handful of papers study this market. Miller and Puthenpurackal (2002) investigate 128 bond issues from 14 countries and the choice between issuing as public debt in the U.S. market versus issuing in the Euodollar market, but otherwise do not consider unregistered bonds issued under Rule 144A. Chaplinsky and Ramchand (2004) find that foreign firms issue investment grade bonds into both the public debt as well as the Rule 144A market, but do not investigate determinants of which market firms choose. Gao (2011) investigates a sample of bonds issued between 1990 and 2006, and finds that foreign firms are are significantly less likely to issue a Yankee bond, when compared to issuing a Rule 144A or Eurodollar bond, following the passage of the Sarbanes-Oxley Act. Collectively, research on the unique features of this market remain sparse.

Second, this research contributes to the ongoing debate surrounding the SEC's

[3]An endogenous switching model estimates a system of equations on two or more subsamples, where the endogeneity issue arises based on which subsample the individual self-selects themselves into. See Kwan and Carleton (2010) for an example applied to the choice between public versus private debt.

decision to allow foreign firms the option to report using IFRS without reconciliation to U.S. GAAP. This rule change represents one of the most significant accounting policy changes in the United States' recent history, but it did not occur without significant controversy. Advocates in favor of the rule change argued that both IFRS and U.S. GAAP provide high quality disclosure, that firms should be allowed to choose which standard to follow, and that the requirement to report or reconcile to U.S. GAAP imposed prohibitive disclosure costs on foreign firms (Jamal et al., 2008). Advocates against the rule change cautioned that it is not the quality of IFRS, but the comparability that should be considered, and that material differences between U.S. GAAP and IFRS continue to exist (Hopkins et al., 2008). Despite the debate, the empirical literature so far focuses only on cross-listed equities, and suggests that the rule change passed with very little capital market consequence. For example, Kim et al. (2012) investigate a sample of 78 firms with cross-listed equity both before and after the rule change, and find no effect on the probability of informed trading (PIN), cost of equity, analyst forecasts, institutional ownership, stock price efficiency, or voluntary disclosure amongst those foreign firms reporting under IFRS. Consistent with this, Jiang et al. (2010) find no evidence that eliminating the reconciliation requirement changed the market's response to the announcement of 20-Fs by IFRS filers. Thus, if this accounting rule change conveyed any capital market consequence, it has yet to be observed in the academic literature. My study differs not only by it's emphasis on debt, but by focusing on the initial decision to register with the SEC or not, as well as the capital market consequences amongst unregistered issues.

Finally, this paper contributes to the ongoing investigation into the capital market consequences of global trend towards acceptance of IFRS. In principle, harmonization can be achieved by either *commonality* or *reciprocity* (Coffee Jr, 1998, p.667). Commonality occurs when all firms are subject to a similar set of disclosure requirements,

which is represented by the global convergence to IFRS. Reciprocity occurs when one country allows the rules from another country, and is represented by the SEC's decision to allow IFRS filings. Whether or not convergence of either type has capital market consequences is still an ongoing debate in the accounting literature (Daske et al., 2008; Christensen et al., 2013; Barth and Israeli, 2013). The findings of this paper suggest that reciprocity leads to more firms voluntarily subjecting themselves to U.S. disclosure regulation, and participating in the U.S. public markets.

My paper is related but distinct from at least two other current working papers. Chen et al. (2013) use bond trading yields to investigate changes in the cost of debt amongst a sample of foreign firms registered with the SEC following the 2007 rule change. They find no change in trading yields. By construction, the Chen et al. (2013) sample includes only SEC registered firms, and does not consider unregistered debt issues into the Rule 144A market. Florou and Kosi (2013) investigate the probability of issuing public bonds versus private bank loans amongst a sample of international firms following mandatory adoption of IFRS. They find that firms are more likely to issue public debt following mandatory IFRS adoption, but otherwise do not consider the U.S. capital markets or changes in U.S. disclosure regulation.

2. BACKGROUND AND RELATED PAPERS

2.1 SEC Registration Requirements for Foreign Firms

The Securities and Exchange Acts of 1933 and 1934 generally require every corporation in the world to register with the SEC whenever securities are transacted in the United States unless a specific exception exists. SEC registration requires filing a registration statement, which initially includes a prospectus, financial information, and other required disclosures. Only after the SEC reviews and approves the submission does the registration become effective, which allows the securities to transact publicly.[1]

Even amongst SEC registered corporations, the securities laws distinguish between domestic firms and Foreign Private Issuers (FPIs), where FPIs are granted a number of accommodations when reporting to the SEC.[2] For example, FPIs are not required to provide quarterly or current reports, are exempt from proxy rules governing the procedures for soliciting shareholder votes, are exempt from Regulation FD governing non-public disclosures, and are exempt from some beneficial ownership reporting. The SEC allows FPIs to report using Form 20-F, which contains substantially similar disclosures as the Form 10-K used by domestic firms, but with special instructions for foreign reporting.

One of the most controversial accommodations granted to Foreign Private Issuers is the choice to report their financial statements using IFRS or local GAAP. Before 2008, registered FPIs using IFRS or local GAAP were also required to reconcile

[1]Beginning in 2005, the registration statements of certain Well-Known Seasoned Issuers become effective upon filing, and the SEC does not have the opportunity to review and approve these statements before securities are sold.

[2]The word "private" is used only to distinguish these corporations from government or municipal entities, and is not meant to imply that these firms are excluded from the public markets.

their financial statements to U.S. GAAP; but this requirement changed in 2008 to allow IFRS financial statements without reconciliation. The rule change significantly reduced the cost of complying with the SEC's financial reporting requirements, at least for those firms using IFRS. A reconciliation requires disclosure in addition to numerical quantification of material differences between the two reporting standards.[3] The more common reconciling items include disclosures on stock-based compensation, deferred taxes, post-retirement benefit plans, derivatives, and other financial investments. Significant reconciling items are also included in the Management's Discussion and Analysis (MD&A), and some firms list the reconciliation as one of the firm's significant risk factors.

A Foreign Private Issuer can avoid the requirement to register with the SEC – and consequently avoid any reconciliation to U.S. GAAP – if the issuing firm relies on a specific exemption from registration. For example, private placements are generally exempt from registration when the issuing corporation does not use broad solicitation or advertising in the United States to market the securities. Primary issues to the firm's underwriters are also covered by this exemption. If securities are issued without SEC registration, then the investor receives a "restricted security", which may prevent subsequent trading of the security on the secondary market.

Because U.S. securities laws apply on a transaction by transaction basis, restricted securities can only trade on a secondary market if the securities are eventually registered, or if the holder of the restricted securities relies on a continued exemption from registration. One such exemption is Rule 144A, which was adopted by the SEC in April 1990 in order to encourage a more liquid secondary market for unregistered

[3]Item 18 of the Form 20-F instructions specifically require Foreign Private Issuers to provide "all information required by U.S. generally accepted accounting principles and Regulation S-X unless such requirements specifically do not apply to the registrant as a foreign issuer." Regulation S-X governs the required information in both the financial statements and accompanying notes.

securities. Rule 144A allows the resale of restricted securities after a specified holing period (typically six months to a year) to certain Qualified Institutional Buyers (QIBs), which are generally large investment institutions that meet specific requirements outlined in the rule.[4] Reporting requirements in the Rule 144A market are significantly more relaxed that in the public markets, since the issuing company is only required to provide "reasonably current" financial information, and no requirement to reconcile to U.S. GAAP exists. Therefore, Rule 144A creates a liquid market for firms wishing to avoid SEC registration.

2.2 The Choice to Register with the SEC

Only a handful of papers examine a firm's choice to register with the SEC, but a consistent theme is that the registration choice is sensitive to the costs of complying with regulation. For example, Bushee and Leuz (2005) find that over 75% of over-the-counter market firms delisted in order to avoid complying with a 1999 expansion of the Securities and Exchange Acts that would have required those firms to register with the SEC. Leuz et al. (2008) find a large number of firms that deregistered with the SEC in order to avoid complying with the Sarbanes Oxley Act. Similarly, Gao (2011) finds that firms are more likely to issue bonds outside the United States following the passage of SOX. But whether or not financial reporting requirements impose a costly barrier to SEC registration remains an important and unanswered question.

Several studies suggest that financial reporting and disclosure quality are key determinants in firms' choice to obtain public versus private debt. For example,

[4]Qualified Institutional Investors include regulated insurance companies, pension funds, registered investment companies, trusts, banks, and similar entities, with greater than $100 million in discretionary investments. In order to qualify for Rule 144A, the selling firm must have good reason to believe that the prospective buyer is a QIB, and must explicitly inform the buyer that they intend to rely on Rule 144A for the continued resale of a restricted security.

Bharath et al. (2008) find that firms with better accounting quality are more likely to issue public as opposed to private debt. Baber and Gore (2008) find that municipalities in states that mandate GAAP accounting are more likely to issue public as opposed to private debt. Finally, Dhaliwal et al. (2011) find that firms with greater voluntary disclosures are also more likely to issue public as opposed to private debt. Despite the consistent set of results, the inferences from these papers have only limited carryover to the current setting. These studies emphasize the informational advantage of private lenders (e.g. relationship lending) amongst firms with already public information, but otherwise do not examine the initial registration decision.

Very few papers investigate foreign issues into the Rule 144A market. Chaplinsky and Ramchand (2004) find that the yield spread on Rule 144A foreign bonds is greater than that of comparable registered bonds, which suggests that SEC registration conveys a reduction in the cost of debt for at least some firms. Gao (2011) finds that foreign firms are more likely to issue into the Rule 144A market following the Sarbanes Oxley act, which suggests that Rule 144A can be used to avoid complying with costly regulation.[5]

2.3 Existing Research on the SEC Rule Change

Existing studies on the SEC's decision to remove the reconciliation requirement for IFRS filings focus on the equity markets, and specifically on securities that were registered both before and after the rule change. These cross-listings into the United

[5]Foreign Private Issuers appear to use Rule 144A differently from domestic firms. Fenn (2000) suggests that domestic issuers of junk-bonds use Rule 144A to issue debt quickly, but not to avoid SEC registration. He investigates a sample of speculative grade bonds issued between 1993 and 1998, and finds that approximately 97% are eventually registered with the SEC. Fenn (2000) intentionally excludes foreign bond issues from his analysis on the argument that many foreign firms still use Rule 144A to avoid compliance with SEC disclosure completely, and therefore their securities remain unregistered indefinitely. Indeed, given the costs of complying with other regulations such as the Sarbanes-Oxley Act, many foreign firms issue into the Rule 144A market with no intent of ever registering with the SEC, which is known in the practitioner literature as "Rule 144A for life".

States provide a natural setting within which to ask questions about how removing the U.S. GAAP reconciliation affects the firm's information environment. Interestingly, the dominant finding is that the decision to remove the reconciliation came with little loss to the firm's information environment. For example, Jiang et al. (2010) find no change in the market's reaction to the Form 20-F after the rule change.[6] Consistent with this, Kim et al. (2012) investigate a sample of 78 IFRS firms that were cross-listed on U.S. exchanges both before and after the rule change, and find no change in liquidity, the probability of informed trading (PIN), cost of equity, analysts forecast error, bias, and dispersion, institutional ownership, and stock price efficiency or synchronicity. In subsequent analysis, Kim et al. (2012) also find that the same IFRS firms do not voluntarily continue the GAAP reconciliation, which suggests that the reconciliation was probably more costly than it was worth.[7] If anything, there is some evidence to suggest that removing the U.S. GAAP reconciliation conveyed a net benefit to investors. Chen and Khurana (2014) find positive abnormal returns amongst cross-listed IFRS firms around key dates in the development of the SEC rule change, which suggests that investors value the reduction in compliance costs over the value of the disclosures in the reconciliation. Once again, inferences from the existing studies are limited due to their focus on the equity markets and the sample requirements to observe only those firms with registered securities both before and after the rule change.

[6]While several studies find that the GAAP reconciliation contains value relevant information (Amir et al., 1993; Bandyopadhyay et al., 1994; Barth and Clinch, 1996; Harris and Muller, 1999; Henry et al., 2009), others claim that this information is available from sources other than the reconciliation (Pope, 1993). Indeed, Rees and Elgers (1997) investigate a sample of foreign firm registration statements with historical reconciliation of financial information, and find that the reconciling items are value relevant even in the years when they weren't disclosed. If the information in the reconciliation is available from other sources, then removing this requirement should result in little change to the informativeness of SEC filings.

[7]In another study, Yu (2011) uses textual analysis and finds some evidence that IFRS firms increased the level of disclosure in the year immediately following the rule change, which suggests that firms compensate for some loss of information in the year after the reconciliation is removed.

3. THEORY AND HYPOTHESIS DEVELOPMENT

Any theoretical prediction about a firm's decision to register with the SEC requires a careful understanding of the trade-off between the costs and benefits of registration. Much of the existing literature argues that firms benefit from registration by bonding themselves to a regulatory regime that certifies a certain minimal level of disclosure (Coffee Jr, 1998, 2002). Indeed, the documented benefits of registration are numerous, even amongst firms with existing reporting obligations abroad: SEC registration is associated with better minority shareholder protections (Reese and Weisbach, 2002), increased firm value (Doidge et al., 2004), and decreased cost of capital (Hail and Leuz, 2009). Even within the bond market, the empirical evidence suggests that yield spreads on registered Yankee bonds are less than that of comparable Rule 144A issues (Chaplinsky and Ramchand, 2004). But despite the benefits of registration, one need only to notice that the vast majority of the world's corporations don't register with the SEC to realize that costly barriers to registration exist. One of the most significant costs of registration – especially for foreign firms – is the additional disclosures themselves (Licht, 2003; Latham & Watkins LLP, 2013). Since Rule 144A allows foreign firms to access the U.S. debt markets without registration, at least part of a firm's decision to register is influenced by the disclosure costs of regulation.

How investors respond to a change in disclosure costs is also important to predicting firm behavior, since part of a firm's decision to disclose (e.g. register with the SEC) anticipates this investor reaction. Theoretical work in the disclosure literature suggests that – in the absence of disclosure costs – firms should want to disclose their private information in order to avoid a negative investor reaction to withheld

disclosure. Investors rationally expect that firms with good news want to disclose it, and that firms with bad news try to hide it. This result, known in the economics literature as the Unraveling Hypothesis (Grossman and Hart, 1980; Grossman, 1981; Milgrom, 1981), predicts that it is precisely this investor negative reaction to withheld disclosure that drives firms to disclose more.[1] Thus, in the absence of disclosure costs, investors might infer that firms use Rule 144A to avoid registration and hide bad news, which in turn should drive all firms to register with the SEC.

The key result of the Unraveling Hypothesis changes in the presence of disclosure costs. When disclosure is costly, investors can no longer infer that withheld disclosure is a signal of bad news, because investors understand that firms might withhold information only to avoid incurring the disclosure costs. This argument was analytically modeled by Verrecchia (1983), who investigates both a firm's decision to disclose and investors' reaction to withheld disclosure under a change in disclosure costs, and makes two theoretical predictions:

1. Firms disclose more (less) when disclosure costs are reduced (increased).

2. Investors react more (less) negatively to the withheld disclosure when disclosure costs are decreased (increased).

Taken together, both predictions suggest that a decrease in disclosure costs leads to market unraveling: firms will volunteer more disclosure, and investors will react more negatively if they don't. Thus, if one could compare a high to low cost disclosure

[1]The theories of Grossman and Hart (1980) and Grossman (1981) also require that investors know about the existence (but not the nature) of private information, and that firms cannot lie in their disclosures. Both of these assumptions would be satisfied in the current setting since SEC registration is an observable firm choice, and since all sales of financial securities – both public and private – are subject to the anti-fraud provisions of the Securities and Exchange Acts. Issuing corporations are prohibited from making false or misleading statements, or from omitting information if, as a result of the omission, the information provided would be false or misleading.

regime change, then one should observe more firm disclosure and greater investor negative reaction to withheld disclosure.

An important highlight of the above argument is that the Unraveling Hypothesis does not predict that investors will react any differently to a change in disclosure costs in the condition that the firm provides the disclosure. Said differently, the theoretical argument predicts that investors react more negatively following a decrease in disclosure costs, but only in the condition that disclosures are withheld. This is because investors do not infer anything about the nature of information that is disclosed. Thus, an implicit prediction of the above argument is that:

3. Investors react no differently to dislosures when disclosure costs are decreased (increased).

Several features of the current setting fit the framework developed by the arguments above. Investors cannot unambiguously infer that firms issue into the Rule 144A market to hide bad news, because some firms might only want to avoid the disclosure costs of SEC registration. If the rule change to allow IFRS reporting without a reconciliation to U.S. GAAP reduces these disclosure costs, then more firms should register with the SEC, and investors will react more negatively to those firms that don't.

4. RESEARCH DESIGN

4.1 The Probability of SEC Registration

I investigate the probability of registering a bond issue with the SEC using both mandatory adoption of IFRS at the country level, and the recent SEC rule change to allow IFRS reporting, as sources of exogenous variation in disclosure requirements. The primary specification is a difference-in-difference-in-differences design, whereby bond issues from IFRS countries experience pre- to post- period changes in the probability of registration following the SEC rule change. This setting allows for estimation of the following linear model:[1]

$$y_{i,j,t} = \alpha_j + \gamma_t + \beta_1(IFRS_{j,t}) + \beta_2(IFRS_{j,t}) \cdot (Post_t) + \epsilon_{i,j,t} \tag{4.1}$$

where $y_{i,j,t}$ is a binary variable indicating SEC registration for the ith bond from country j, in year t. Fixed effects are included at the country, α_j, and year, γ_t, levels. $IFRS_{j,t}$ is a binary variable indicating if country j requires IFRS reporting in year t, and $Post_t$ is a binary variable indicating the years when the SEC allows IFRS filings. All other (un)observed variables are captured in $\epsilon_{i,j,t}$. The main coefficient of interest is β_2, which measures the change in the probability of registering with the SEC for bonds from countries with mandatory IFRS in the period after the SEC's rule change. The main effects for $IFRS_j$ and $Post_t$ are subsumed by the country and year fixed-effects, respectively. Standard errors are clustered on country.[2]

[1] This equation estimates a linear probability model in cases where the dependent variable is a binary outcome. The coefficients of a linear probability model recover marginal effects, as opposed to the coefficients of a probit or logit model, which recover structural parameters of an assumed cumulative probability distribution function. Wooldridge (2010, p.563) points out that linear probability models often do a very good job when the main objective is to estimate marginal effects.

[2] There are too few years to also cluster by year.

Two advantages of this research design are worth emphasizing. First, IFRS reporting is measured at the country-level, instead of the firm-level, in order to capture exogenous variation in accounting standards caused by changes in the countries own reporting requirements. If the accounting standard were measured at the firm-level, then this measure would capture the firm's reporting *choice*, which could introduce an endogeneity bias into the model. The model does not ignore the possibility that firms could voluntarily choose to report using IFRS in the absence of country level reporting requirements; only that those reporting choices would be endogenous.

The second advantage of using country-level reporting requirements is that it does not rely on controlling for firm-level characteristics for identification. This is particularly advantageous in the current setting, when sample firms either cannot be matched to their home-country financial statements, or when their home-country financial statements are not publicly available. Indeed, a large number of firms issuing into the Rule 144A market are not only more likely to avoid public disclosure requirements in the U.S., but are also more likely to avoid public disclosure requirements in their home country as well. Thus, relying on country-level sources of exogenous variation relaxes the sample requirements. If anything, restricting the sample to include only firms with identifiable characteristics could potentially bias the sample selection process towards firms with already existing public disclosures.[3]

4.2 Cost of Debt and Credit Rating

I also examine the bond's cost of debt and credit rating as a function of changes in country-level financial reporting requirements. The hypotheses predict that the rule change will have a different effect in the Yankee bond market than it will in

[3]As discussed in the sample and data selection, most U.S. bond issues cannot be matched to their home-country financial statements because of differences in the security numbering system used in the United States versus abroad. Restricting the sample to include only those bonds with matched data results in significant sample attrition.

the Rule 144A market. Therefore, the cost of debt and credit ratings are estimated using a system of equations:[4]

$$y^*_{SEC=1} = \beta_1' x + \epsilon_1 \tag{4.2a}$$

$$y^*_{SEC=0} = \beta_2' x + \epsilon_2 \tag{4.2b}$$

where $y^*_{SEC=1}$ is the cost of debt (credit rating) *available in the Yankee bond market*, and $y^*_{SEC=0}$ is the cost of debt (credit rating) *available in the Rule 144A market*. The right hand side of the equations, $\beta_1' x$ and $\beta_2' x$, represent the same specification as in equation (4.1), but where the coefficients are allowed to differ between the Yankee and Rule 144A markets.

The main econometric problem faced when estimating the above system of equations is that we only ever observe $y^*_{SEC=1}$ or $y^*_{SEC=0}$, but never both, depending on which market the bond is issued into. If we wish to estimate the effect of the rule change on two separate markets, then we would ideally observe the consequences for the same bond in both markets. The model is complicated by the fact that each firm endogenously selects which market to issue the bond into. Because of this self-selection problem, OLS estimation of the system of equations would yield inconsistent estimates.

I use an endogenous switching model in order to obtain consistent estimation of the parameters in equation (4.2).[5] The model begins by specifying a selection rule, whereby each firm chooses to register the bond with the SEC when the net benefit

[4]Throughout the paper, I use an * to indicate a latent variable. Firm, country, and year subscripts are suppressed in order to make the notation more clear.

[5]Endogenous switching models are derived in Maddala (1986, p.257), but also discussed in Cameron and Trivedi (2005, p.555) and Li and Prabhala (2005). Endogenous switching models are also known as Roy (1951) models in the economics literature. See Kwan and Carleton (2010) for an example of such a model applied to the choice between private versus public debt.

of doing so is positive. The selection rule is:

$$SEC = \begin{cases} 1 & \text{if } \pi^* > 0 \\ 0 & \text{if } \pi^* \leq 0 \end{cases} \tag{4.3}$$

where π^* is a new latent variable that captures the unobservable *net* benefit of registering with the SEC. Intuitively, a firm observes the potential outcome of registering the bond, $y^*_{SEC=1}$, and the potential outcome of private placement, $y^*_{SEC=0}$, and considers the difference between the two potential outcomes when deciding which market to the issue the bond into. At least part of the net benefit is the difference between these potential outcomes, less any compliance costs. Thus, the net benefit function is specified as:

$$\pi^* = \underbrace{(y^*_{SEC=1} - y^*_{SEC=0})}_{\text{Diff. in Potential Outcomes}} - \gamma' z + \eta \tag{4.4}$$

where z is some exogenous registration cost. This equation demonstrates the unique advantage of the model, because it assumes that firms can observe the difference in potential outcomes, and then choose the market with the best terms available. Substituting equations (4.2a) and (4.2b) into equation (4.4) yields the following reduced form equation:

$$\pi^* = (\beta_1' x - \beta_2' x + z'\gamma) + (\epsilon_1 - \epsilon_2 + \eta) \tag{4.5}$$

which is now specified as a linear function of observable characteristics from equation (4.2), and an exogenous determinant of compliance costs from equation (4.4). The main point of equation (4.5) is to demonstrate that the unobservable net benefit of registration can be expressed as a linear function of observable variables.

Estimation of the model utilizes the familiar result from Heckman (1976), who

demonstrates that an expectation, conditional upon a linear selection rule as in equation (4.3), can be estimated with a two step procedure. First, estimate the probability of SEC registration with a probit model. Second, augment the second-stage linear regression with an inverse Mills ratio, which is a function of the predicted probabilities from the first-stage probit. Thus, the final system of equations to estimate is:

$$E[y|x, SEC = 1] = x'\beta_1 + \rho_1 \cdot \lambda(w'\hat{\pi}) \tag{4.6a}$$

$$E[y|x, SEC = 0] = x'\beta_2 + \rho_2 \cdot \lambda(-w'\hat{\pi}) \tag{4.6b}$$

where w contains all the unique regressors from equation (4.5), $\hat{\pi}$ contains the predicted coefficients from the first stage probit model, and $\lambda(\cdot)$ is the inverse Mills ratio function.

The main advantage of an endogenous switching model is that it recovers more useful estimates of the (unobserved) counterfactual outcome (Li and Prabhala, 2005). If a firm issues a Yankee bond, then we observe $y_{SEC=1}$. But the endogenous switching model allows us to estimate what the effect of the rule change would have been on the outcome $y_{SEC=0}$, had the firm issued a Rule 144A bond instead. Thus, the interpretation of coefficients is straightforward: β_1 measures the effect of x on y, *had the bond been issued into the Yankee market*, while β_2 measures the effect of x on y, *had the bond been issued into the Rule 144A market.*

Equation (4.4) requires an instrument, z, that proxies for the cost of registration.[6] I use the presence of an existing SEC reporting obligation as the excluded instrument

[6]Strictly speaking, the inverse Mills ratio does not require an excluded instrument for identification. However, estimating the inverse Mills ratio without an instrument relies exclusively on an assumption of multivariate normally distributed errors (Lennox et al., 2011). Regardless, my results are unchanged when I do not use an excluded instrument, and when I use the bond features as set of excluded instruments.

when calculating the inverse Mills ratio above. If the firm already files annually with the SEC, then the marginal cost of registering the bond issue is much smaller than if the firm was reporting for the first time. A firm can have an existing SEC reporting obligation from either a previous debt issuance, or from a previous cross-listing. I determine the status of cross-listed equity from a listing of sponsored ADRs from J.P. Morgan.[7] I consider a previous bond issue to create a reporting obligation if (a) the previous bond issue was registered with the SEC, and (b) the secondary bond issue was offered before the previous bond issue matures.

[7]https://www.adr.com. J.P. Morgan covers over 95% of American Depository Receipts listed by Citibank, Bank of New York (Mellon), and Deutsche Bank. I use J.P. Morgan exclusively because only this listing provides effective and termination dates, as well as sponsorship status.

5. SAMPLE AND VARIABLE DESCRIPTIONS

The main sample of bonds is obtained from Mergent Fixed Income Securities Database (FISD), which is used because of its extensive coverage of U.S. bond issues, including data on Rule 144A status and SEC registration. I start with all bonds in FISD that are issued by corporations domiciled outside of the United States, and are either a registered Yankee Bond, or else specifically marked as exempt by Rule 144A. I exclude corporations from financial services industries, as well as municipal and government bond issues.[1] My main sample includes all foreign bond issues between 2000 and 2013.

I also identify several bond characteristic for each issue in FISD. I include a binary variable, *Floating Rate Coupon*, to indicate if the coupon payments periodically reset. I also include a binary variable to indicate if the bond is *Callable*, and a binary variable indicate if the bond is *Putable*. In order to capture differences in the bond's repayment terms, I include measures for the bond's *Duration* and *Convexity*, whose calculations are defined in Appendix A.

Each bond's cost of debt and credit rating is measured following Qi et al. (2010). The cost of debt is calculated by first measuring the bond's yield based on sales price, coupon rate, and time to maturity. Because the bond's yield depends on assuming a fixed coupon rate, I exclude all floating coupon rate bonds from this calculation. I then subtract the corresponding risk-free rate from the bond yield, where the risk-free rate is obtained from a Treasury security with a corresponding time-to-maturity as reported by the Federal Reserve's H.15 Daily Interest Rates report. The bond rating

[1] A small subset of foreign Rule 144A bonds are eventually registered with the SEC. I classify all bonds issued under Rule 144A, but that were eventually registered with the SEC, as a Yankee bond. Therefore, the only bonds classified as a Rule 144A private placement are specifically labeled as "Not Registered" by Mergent FISD.

is obtained by converting credit ratings to a numerical value from zero to twenty-one. When more than one rating is available from each of the three bond rating agencies - Moody's, Fitch, and Standard & Poors - the bond rating is the mean of all available values.

With respect to home-country level variables, mandatory IFRS adoption dates are collected from a number of sources. I primarily rely on hand-collected dates from the IFRS Foundation and International Accounting Standards Board. The IFRS Foundation publishes convergence reports for most countries, which include the IFRS convergence status and adoption dates, when available. I also collect adoption dates from Hail and Leuz (2007) and Christensen et al. (2013).[2]

In additional analysis, I also explore cross-sectional variation with respect to country-level indicators of legal and disclosure regulation. I study legal origin, creditor rights, and disclosure requirements. *English Legal Origin* is a binary variable equal to one if the issuing country's legal origin is English, and equal to zero otherwise, obtained from Djankov et al. (2007). *Creditor Rights* is a variable that ranges from zero to four, increasing in the strength of the country's creditor rights, as defined by La Porta et al. (1997) and obtained from Djankov et al. (2007). *Disclosure Requirements*, which measures the extent to which home-country laws require disclosure, is obtained from La Porta et al. (2006). Each of the country variables are measured once at the beginning of the sample period, and do not change over the sample period. Because these country-level measures are not observed for all countries in my initial sample, a caveat of the cross sectional analysis is that each model can only be estimated on the subset of countries for which data is available.

[2]The adoption date reflects mandatory adoption of IFRS as issued by the IASB, and does not include non-IASB versions of IFRS. When IFRS is phased in over multiple dates, I use the date for which IFRS is required for large and publicly traded companies because this date best captures the reporting requirement for firms accessing capital markets.

Although the identification strategy does not rely on using firm-level characteristics for estimation, I obtain this data for a subsample of firms from Compustat Global.[3] The main challenge in matching bonds to firm fundamentals is that the CUSIP number assigned to a U.S. issued bond does not necessarily correspond with company identifiers issued in other countries (e.g. SEDOL, ISIN).[4] Thus, firm-level characteristics are only available when a correspondence is recorded by the data vendor. As such, any intersection with firm-level characteristics significantly reduces the sample, and potentially biases the results towards large firms with already available public disclosures. This is particularly concerning when foreign firms are not listed in either their home market or U.S. market. For example, Chaplinsky and Ramchand (2004) document that over 60% of international 144A issuers do not have public sources of financial information. Of all the bonds in my initial sample, I match 512 to firm characteristics.[5] For this subsample of firms, I obtain *Firm Size*, measured as the log of total assets, market-to-book (MTB), and return on assets (ROA).

[3]Coverage with Datastream/Worldscope was found to be comparable.

[4]I am grateful to Alice Heerse at Standard & Poors for phone calls confirming this case.

[5]My sample of bonds matched to firm characteristics is comparable to existing studies. Miller and Puthenpurackal (2002) obtains a sample of 260 Yankee bonds issued from 1987 to 1998 matched to firm characteristics, but does not obtain a sample of Rule 144A bonds. Chaplinsky and Ramchand (2004) obtain a sample of 195 Rule 144A bonds issued between 1991 to 1997, but otherwise do not obtain a sample of Yankee bonds. Gao (2011) obtains a sample of 296 Yankee bonds and 353 Rule 144A bonds issued over the years 1990 to 2006.

6. RESULTS

6.1 Sample and Descriptive Statistics

Figure 6.1 presents the total offering amount of both U.S. domestic and foreign bond issues in FISD from 1990 to 2013. While foreign issues comprise less than half of the total dollar value of bond issues in any given year, the dollar value of the foreign market is still economically significant. The figure also suggests that the SEC rule change in 2008 did not dramatically affect the dollar volume of foreign bonds, as evidenced by the similar time-series trend between both foreign and U.S. domestic bond issues.

Figure 6.2 presents the percentage of U.S. domestic and foreign bonds issued into the Rule 144A market from 1990 to 2013. Interestingly, the near majority of foreign bonds are issued into the Rule 144A market before the SEC rule change. The years after the SEC rule change show a dramatic shift in the registration rate of foreign bonds, but no comparable shift in the registration rate of U.S. domestic bonds. In fact, in the years following the SEC rule change, the percentage of foreign bonds issued into the Rule 144A market is nearly comparable to that of U.S. domestic bonds. Thus, the figure presents some of the first evidence that foreign bonds are more likely to register with the SEC in the years following the SEC rule change.

Figure 6.3 presents the frequency of foreign bonds issued into each of the public Yankee and Rule 144A markets from 1990 to 2013. The results corroborate the inferences from Figure 6.2, and suggest a dramatic shift in the rate at which foreign bonds register with the SEC following the rule change to allow IFRS filings.

Table 6.1 presents descriptive statistics for all variables used throughout the analysis. The unconditional probability of registering with the SEC is 74 percent for the

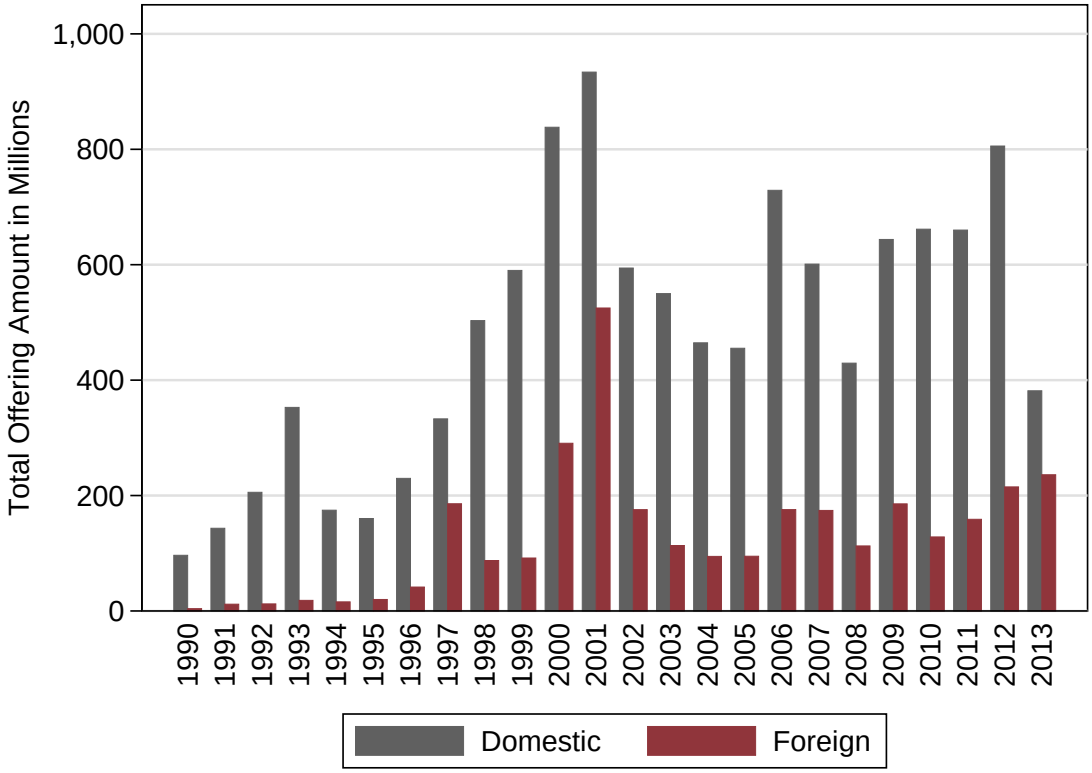

Figure 6.1: Offering amount of bonds covered by Mergent.

entire sample of bonds. Of all the bonds in the sample, 53 percent originate from countries with mandatory IFRS reporting. The mean cost of debt is 2.71 percent above the corresponding risk-free rate, and the mean bond rating is equivalent to an BBB (investment grade) rated bond. Table 6.2 presents descriptive statistics when split by market type and sample period. Panel A presents the difference between Rule 144A and Yankee bond issues. The two markets are statistically different along several dimensions, but the differences are economically small. For example, Yankee bonds have lower cost of debt, but only by about 32 basis points. Differences in the credit rating of bonds in both markets is similarly small. The average Rule 144A bond is rated BBB+, while the average Yankee bond is rated BBB, which yields sta-

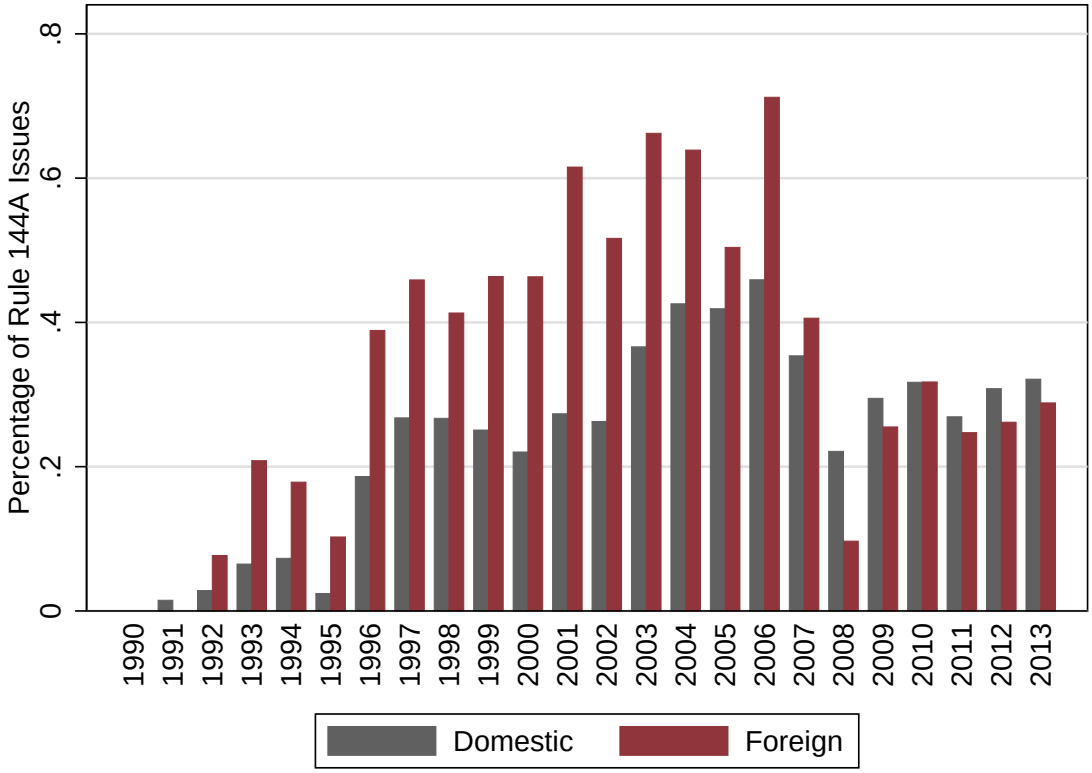

Figure 6.2: Domestic versus foreign use of Rule 144A

tistically different means but not statistically different medians. One striking finding is that bonds from countries with mandatory IFRS are no more or less likely to appear in one market or another. Panel B presents differences in means and medians when split by sample period. Consistent with the global adoption of IFRS, less than a majority of bonds issued between 2000 to 2007 were issued from countries with mandatory IFRS, while the greater majority of bonds issued between 2008 and 2013 were from IFRS countries. Consistent with the 2008 financial crisis, there was a 144 basis point increase in the cost of debt, and small decrease in credit ratings. One interesting observation is the large shift in SEC registrations, from only 68 percent of bond issues in the pre-period to 90 percent of bond issues in the post period.

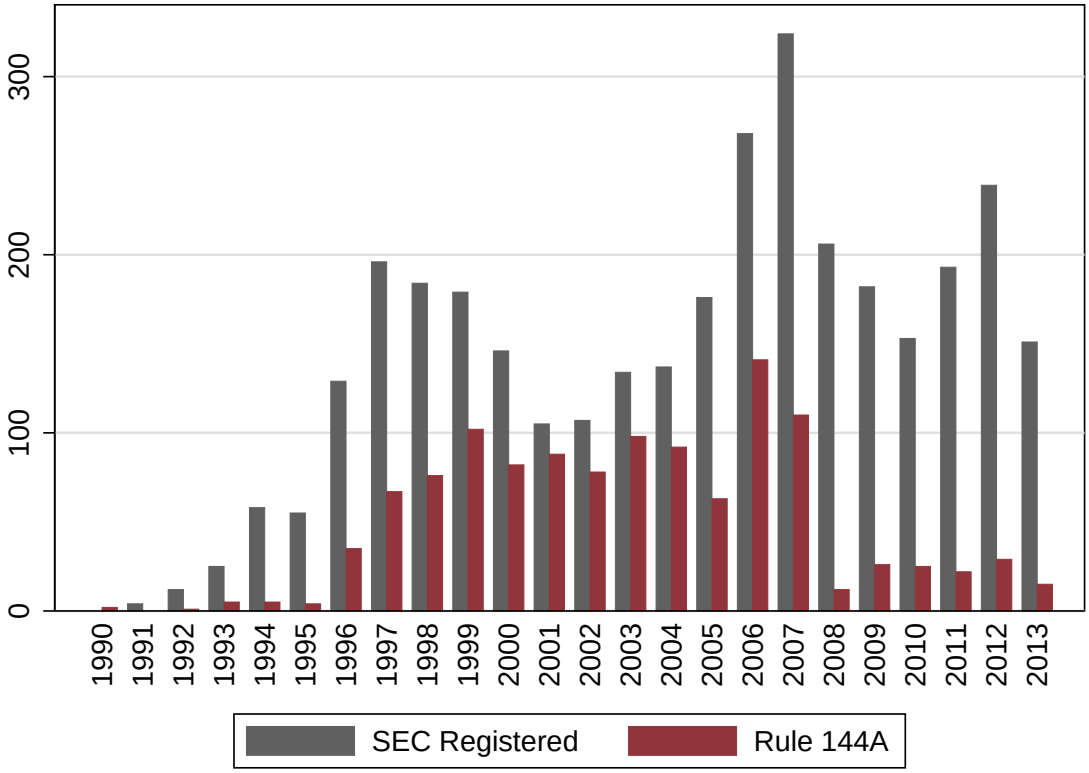

Figure 6.3: Frequency of foreign bond issues by year

6.2 Probability of SEC Registration

Table 6.3 presents the results of estimating various versions of equation (4.1), which predict the probability of registering the bond issue with the SEC as a function of the change in reporting requirements. Model (1) includes the full sample of foreign bonds while controlling for bond characteristics. The coefficient on the interaction between IFRS and the SEC Post period is positive and statistically significant, which suggests that firms from IFRS countries are more likely to register their bond with the SEC following the rule change. I also re-estimate the main results for two sub-samples of bonds, which exclude highly influential countries. Model

Table 6.1: Sample Descriptive Statistics

	$\bar{x}$	σ	Lower Quartile	Median	Upper Quartile
SEC Registered	0.74	0.44	0.00	1.00	1.00
Mandatory IFRS	0.53	0.50	0.00	1.00	1.00
Cost of Debt	2.70	3.05	0.90	2.30	4.75
Bond Rating	14.98	5.07	10.50	15.00	19.00
Floating Coupon	0.22	0.42	0.00	0.00	0.00
Putable	0.04	0.18	0.00	0.00	0.00
Callable	0.56	0.50	0.00	1.00	1.00
Duration	5.68	3.34	3.94	5.33	7.11
Convexity	58.69	74.96	20.71	38.00	66.10
Face Value (millions)	0.43	1.48	0.11	0.25	0.50
English Legal Origin	0.44	0.50	0.00	0.00	1.00
Creditor Rights	1.99	1.35	1.00	2.00	3.00
Disclosure Requirements	0.66	0.21	0.50	0.75	0.83
Firm Size	8.59	2.04	7.39	8.63	9.99
MTB	2.67	3.51	0.98	1.76	3.23
ROA	0.01	0.17	-0.00	0.03	0.07

(2) excludes all bonds issued from Canada, because Canadian corporations benefit from the Multi-jurisdictional Disclosure System. Model (3) excludes all bonds from the Cayman Islands, since bonds issued from the Cayman Islands are likely from corporate subsidiaries. Importantly, the coefficient on the interaction term for bonds issued from IFRS countries in the period after the SEC rule change remains statistically significant and positive.

Model (4) presents the results when excluding controls for bond-characteristics. A potential concern is that the bond characteristics are themselves endogenous functions of the accounting rule changes. For example, Ball et al. (2015) argue that IFRS adoption decreased the contractability of financial statements, and that IFRS firms rely more on debt covenants to borrow funds than non-IFRS firms. If this is true, then controlling for bond characteristics could inadvertently block the path between

Table 6.2: Comparison Between Rule 144A and Yankee Markets

Panel A: Comparison Between Yankee and Rule 144A Bond Issues

	Rule 144A		Yankee		Differences In...			
	Mean	Median	Mean	Median	Mean	(p-value)	Median	(p-value)
Mandatory IFRS	0.52	1.00	0.54	1.00	-0.01	0.43	0.00	.
Cost of Debt	2.93	2.77	2.62	2.22	0.32	0.01	0.55	0.00
Bond Rating	15.89	15.50	14.64	15.00	1.25	0.00	0.50	0.16
Floating Coupon	0.38	0.00	0.17	0.00	0.21	0.00	0.00	0.00
Putable	0.02	0.00	0.04	0.00	-0.02	0.01	0.00	0.01
Callable	0.50	1.00	0.58	1.00	-0.08	0.00	0.00	.
Duraction	4.84	5.15	5.98	5.43	-1.15	0.00	-0.28	0.00
Convexity	45.41	35.72	63.44	39.14	-18.03	0.00	-3.42	0.04
Face Value (millions)	0.33	0.15	0.47	0.30	-0.13	0.01	-0.15	0.00
Firm Size	7.51	7.71	9.00	9.03	-1.49	0.00	-1.31	0.00
MTB	2.57	1.62	2.71	1.85	-0.14	0.64	-0.22	0.27
ROA	-0.03	0.02	0.02	0.04	-0.05	0.00	-0.03	0.00

Panel B: Comparison Between Pre- and Post-SEC Rule Change

	2000-2007		2008-2013		Differences In...			
	Mean	Median	Mean	Median	Mean	(p-value)	Median	(p-value)
SEC Registered	0.68	1.00	0.90	1.00	-0.21	0.00	0.00	.
Mandatory IFRS	0.44	0.00	0.79	1.00	-0.36	0.00	-1.00	.
Cost of Debt	2.27	1.81	3.70	3.00	-1.44	0.00	-1.19	0.00
Bond Rating	15.29	15.17	14.15	15.00	1.13	0.00	0.17	0.02
Floating Coupon	0.28	0.00	0.07	0.00	0.21	0.00	0.00	0.00
Putable	0.05	0.00	0.01	0.00	0.04	0.00	0.00	0.00
Callable	0.50	1.00	0.71	1.00	-0.21	0.00	0.00	.
Duration	5.55	5.33	5.99	5.31	-0.44	0.00	0.02	0.93
Convexity	58.05	38.68	60.19	36.70	-2.14	0.43	1.97	0.16
Face Value (millions)	0.32	0.20	0.74	0.50	-0.43	0.00	-0.30	0.00
Firm Size	8.08	8.26	9.58	9.82	-1.50	0.00	-1.56	0.00
MTB	2.93	1.90	2.20	1.49	0.73	0.01	0.41	0.01
ROA	-0.02	0.03	0.05	0.05	-0.06	0.00	-0.03	0.00

Table 6.3: Predicting the Probability of Registering with the SEC Following the Rule Change

	Full Bond Sample				Compustat Merged Sample	
	(1) Full Sample	(2) Without Canada	(3) Without Cayman Islands	(4) Without Bond Features	(5) Without Firm Controls	(6) With Firm Controls
Mandatory IFRS	0.012	0.013	0.080**	0.021	0.129**	-0.052
	(0.042)	(0.043)	(0.034)	(0.062)	(0.055)	(0.048)
Mandatory IFRS × Post	0.147***	0.142***	0.069**	0.189**	-0.005	0.104**
	(0.050)	(0.046)	(0.029)	(0.094)	(0.064)	(0.046)
Floating Coupon	-0.003	-0.005	0.187***		0.257***	0.182***
	(0.117)	(0.122)	(0.027)		(0.078)	(0.044)
Putable	-0.147*	-0.145*	-0.165**		-0.142	-0.069
	(0.075)	(0.085)	(0.080)		(0.101)	(0.087)
Callable	-0.034	-0.043	-0.008		0.068*	0.092**
	(0.031)	(0.034)	(0.021)		(0.037)	(0.037)
Duration	0.109***	0.111***	0.082***		0.084***	0.028**
	(0.025)	(0.026)	(0.015)		(0.019)	(0.012)
Convexity	-0.004***	-0.004***	-0.003***		-0.003***	-0.001*
	(0.001)	(0.001)	(0.000)		(0.001)	(0.000)
Face Value	-0.008*	-0.008*	-0.007		0.081**	0.035
	(0.004)	(0.005)	(0.005)		(0.036)	(0.037)
Firm Size						0.057***
						(0.008)
MTB						-0.007
						(0.006)
ROA						-0.070
						(0.081)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2701	2419	2238	3402	503	393

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

the variables of interest as the outcome variable. As already noted in Table 6.2, each of the Yankee and Rule 144A markets differ systematically with respect to bond characteristics. The extent to which market choice is a function of bond characteristics, or vice versa, is unknown. Regardless, the coefficient on the interaction term remains positive and statistically significant.

Models (5) and (6) present the results on the subsample of firms matched to Compustat Global. As discussed above, sample attrition is a primary concern when using a sample of bonds matched to firm characteristics. Indeed, the sample size drops from 2,701 in Model (1) to 503 in Model (5), and 393 in Model (6). This sample attrition could also bias results towards those firms with already publicly available information, which is particularly hazardous when studying the decision to disclose or not.

The coefficient on the SEC rule change is not statistically significant in Model (5), but statistically significant and positive in Model (6). Inferences from the subsample of bonds matched to firm level controls are difficult to interpret. The massive attrition in sample size raises concerns about the aforementioned sample bias. The observation that inferences are sensitive to the inclusion of controls is consistent with this explanation. Because unbiased estimation does not rely on these controls, the remainder of the analysis uses the full sample of bonds.

It is interesting to note that home-country IFRS adoption is only weakly associated with an increased probability of registration. The coefficient on IFRS adoption is statistically significant and positive in Models (3) and (5), but not in any of the other models. Collectively, these results provide only some evidence to suggest that home-country IFRS adoption increases the probability of registering with the SEC, but strong results to suggest that the SEC's rule change to allow IFRS filings significantly increased the probability of registration.

6.3 Cross Country Characteristics

Existing literature suggests a strong link between market participation and the legal protections afforded to investors. For example, La Porta et al. (1997) find that capital markets are more developed in countries with better securities laws, while La Porta et al. (2006) claim that home-country securities laws facilitate contracting between the investor and the investee. Indeed, cross-sectional differences in the legal environment have also been used to explain the capital market benefits of IFRS adoption. For example, Daske et al. (2008) find that mandatory IFRS adoption improves market liquidity, but *only* amongst those countries with already strong enforcement mechanisms.[1] In more related literature, Qi et al. (2010) find that home-country legal protections and disclosure practices affect foreign bonds' cost of debt and credit rating.

While the existing literature motivates the investigation of cross-sectional differences due to legal and enforcement mechanisms, the exact theoretical prediction of how home-country differences will affect market choice in the United States is less clear. Consider the initial adoption of IFRS as an example. A common concern is that IFRS is not uniformly adopted across all countries (Ball, 2006), with some countries adopting IFRS more seriously, while other countries adopt IFRS in name only (Daske et al., 2013). On one hand, if countries with strong legal and enforcement mechanisms adopt IFRS more seriously, then firms from those countries might encounter a smaller marginal cost of registering with the SEC. On the other hand, countries with stronger legal and enforcement mechanisms might substitute IFRS for SEC registration if investors view IFRS as a similar commitment to disclosure (Leuz

[1] Christensen et al. (2013) argue that the adoption of mandatory IFRS is concurrent with changes in legal and enforcement mechanisms, while Barth and Israeli (2013) conclude that both IFRS and enforcement mechanisms are most effective when combined together.

and Verrecchia, 2000; Leuz, 2003). Predictions with respect to the SEC rule change are similarly difficult to construct.

Table 6.4 presents the results of re-estimating equation (4.1) with interactions for country-level measures of investor protections. The three country-level variables include *English Law*, *Creditor Rights*, and *Disclosure Requirements*. Interestingly, the coefficient on the interaction between Mandatory IFRS and the SEC rule change is not statistically significant for all firms, but statistically significant and positive for firms with English common law origin, strong creditor rights, and greater disclosure requirements. Thus, the results suggest that the SEC rule change had the greatest effect on those bonds from countries with already strong legal and enforcement mechanisms. Interestingly, the main effect of initial IFRS adoption is statistically significant and positive across all three models, which suggests that initial IFRS adoption increases the probability of registering with the SEC. However, the interaction of IFRS and the country-level proxies is statistically significant and negative in two of the three models. The combination of these coefficients would suggest that IFRS adoption increases the probability of SEC registration amongst firms from countries with weak investor protections, but not amongst firms from countries with already strong investor protections.

The results from Table 6.4 present a consistent picture: IFRS adoption increases the probability of SEC registration, but only amongst those firms from countries with weak investor protections. Firms from countries with strong investor protections are not any more likely to register with the SEC until after the rule change to allow IFRS filings. This pattern is consistent with the existing literature in the equity markets. Reese and Weisbach (2002) find that foreign firms from countries with weak investor protections are more likely to rely on SEC registration in order to convey a credible commitment to disclosure, while foreign firms from countries with

Table 6.4: Cross Sectional Country Characteristics

	(1) English Law	(2) Creditor Rights	(3) Disclosure Requirements
Mandatory IFRS	0.106***	0.108*	0.247*
	(0.040)	(0.061)	(0.130)
Mandatory IFRS × Country_Var	-0.164***	-0.028	-0.328*
	(0.049)	(0.022)	(0.183)
Mandatory IFRS × Post × Country_Var	0.154***	0.043*	0.296*
	(0.053)	(0.024)	(0.157)
Mandatory IFRS × Post	-0.013	-0.049	-0.135
	(0.032)	(0.058)	(0.108)
Country_Var × Post	-0.055	0.008	-0.134
	(0.052)	(0.021)	(0.158)
Floating Coupon	0.043	0.043	0.041
	(0.032)	(0.032)	(0.032)
Putable	-0.111	-0.101	-0.099
	(0.088)	(0.085)	(0.105)
Callable	-0.059***	-0.057***	-0.059***
	(0.019)	(0.019)	(0.020)
Duration	0.006	0.007	0.005
	(0.008)	(0.007)	(0.008)
Convexity	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)
Face Value	-0.009**	-0.009***	-0.009***
	(0.003)	(0.003)	(0.003)
Country Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Observations	2030	2030	1833

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

strong investor protection are more opportunistic, and will register with the SEC only when accessing the public market provides better financing.

6.4 Cost of Debt Capital and Credit Rating

Table 6.5 presents the results of estimating the bond's cost of debt capital in both the Yankee and Rule 144A markets. The Yankee market model includes only those bonds registered with the SEC, while the Rule 144A market model includes only unregistered bonds. Models (1) through (4) present OLS estimates as a basis of comparison, but as previously mentioned, OLS will yield inconsistent estimates when firms endogenously choose which market to issue the bond into. Unsurprisingly, the coefficient on the SEC rule change is not statistically significant.

Table 6.5: Predicting the Cost of Debt Capital

	OLS				Endogenous Switching			
	Yankee		Rule 144A		Yankee		Rule 144A	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mandatory IFRS	0.533*	0.607	0.052	-0.983	0.549	0.799	0.321	-0.843
	(0.307)	(0.379)	(0.660)	(0.779)	(0.365)	(0.538)	(0.877)	(0.845)
Mandatory IFRS × Post	0.156	0.215	3.053	3.591	0.141	-0.110	4.030**	5.558**
	(0.270)	(0.390)	(2.527)	(2.279)	(0.371)	(0.556)	(1.792)	(2.097)
Putable	-0.839		0.299		-1.020		0.090	
	(0.855)		(0.495)		(0.981)		(0.521)	
Callable	0.705**		1.547***		0.719***		1.397***	
	(0.287)		(0.221)		(0.252)		(0.136)	
Duration	-0.620***		-0.476		-0.605***		-0.414	
	(0.112)		(0.478)		(0.135)		(0.470)	
Convexity	0.016***		0.004		0.016***		0.002	
	(0.003)		(0.017)		(0.004)		(0.017)	
Face Value	-0.690***		-1.098***		-0.695***		-1.093***	
	(0.157)		(0.169)		(0.160)		(0.178)	
Inverse Mills Ratio					-0.487	-1.218	-0.847	-1.523
					(1.259)	(0.783)	(0.935)	(0.917)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1593	1600	462	463	1385	1393	460	462

Models (6) through (8) present the results of estimating the system of equations using the endogenous switching model described in Section 4. The main difference is the inclusion of an inverse Mills ratio. The coefficient on the SEC rule change is statistically significant and positive, but only in the Rule 144A market. The results suggest that the SEC rule change increased the cost of debt available to IFRS firms in the Rule 144A market. The significance in Models (7) and (8), when compared to Models (3) and (4), highlights the importance of accounting for the endogenous choice of market in the research design.

The finding that the SEC rule change does not affect the cost of debt available in the Yankee bond market is also consistent with theoretical predictions. Investors make no inference about the presence of bad news when disclosures are provided (i.e. registered with the SEC). Only in the condition that disclosure is withheld will a decrease in disclosure costs lead investors to infer a greater likelihood that the firm is hiding bad news. Indeed, the null effect of the rule change in the public market is consistent with existing studies. Recall that Kim et al. (2012) find that the rule change does not affect the cost of equity capital amongst cross-listing firms on U.S. stock exchanges.

The results are overall consistent with the Unraveling Hypothesis. Prior to the 2008, the requirement to reconcile home-country financial statements to U.S. GAAP imposed a costly disclosure requirement on SEC registration. Accordingly, some firms issued into the Rule 144A market only to avoid these disclosure costs. Investors could not unambiguously infer that firms in the Rule 144A market were hiding bad news because investors knew that some firms were simply avoiding costly disclosures. The SEC rule change to allow IFRS financial statements without reconciliation reduced the disclosure requirements for some firms. Investors were aware of this decrease in disclosure costs and so inferred with greater likelihood the existence of bad news,

had those firms issued into the Rule 144A market following the rule change. This unobserved investor reaction similarly drove firms from IFRS countries to register their bond issues with the SEC.

It is also interesting to observe that IFRS adoption does not affect the cost of debt in either market. Existing literature presents conflicting results as to the effect of IFRS on cost of capital. For example, Florou and Kosi (2013) find that IFRS decreases the cost of debt amongst European bond issues, but Bhat et al. (2014) find that IFRS adoption does not affect the pricing of credit risk. There is also some evidence to suggest that IFRS was detrimental to debt financing. Ball et al. (2015) find that IFRS adoption decreases the number of accounting based covenants used in debt contracts, which suggests that IFRS leads to less contactable information. Consistent with this claim, Chen et al. (2015) find that IFRS adoption increases the cost of debt capital on a global sample of private bank loans. Based on this existing literature, there is no reason to expect how IFRS adoption should affect cost of debt one way or another.

Table 6.6 presents the results of estimating the bond's credit rating in both the Yankee and Rule 144A markets. Similar to Table 6.5, the OLS estimates are presented as a basis of comparison. The coefficients of interest are no different from zero in either Models (1) through (4). Models (5) through (8) present the results of the endogenous switching model. The coefficient on the SEC rule change is statistically significant and negative in the Rule 144A market, but not in the public Yankee bond market. The finding suggests that the SEC rule change decreased the credit ratings available in the Rule 144A market for firms from IFRS countries. These results largely confirm the inferences from Table 6.5. Investors perceive less creditworthiness amongst bonds issued into the private placement market when the cost of their registration is lowered.

Table 6.6: Predicting Bond Credit Rating

	OLS				Endogenous Switching			
	Yankee		Rule 144A		Yankee		Rule 144A	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mandatory IFRS	-0.134	0.128	-0.118	0.261	-0.289	0.114	-0.781	-0.049
	(0.677)	(0.676)	(1.124)	(1.392)	(0.909)	(0.946)	(1.269)	(1.267)
Mandatory IFRS × Post	-0.970	-1.097*	-6.512	-4.438	-0.853	-1.374	-9.132***	-13.775***
	(0.669)	(0.654)	(4.097)	(4.356)	(0.941)	(0.930)	(3.249)	(4.059)
Putable	-0.858		-3.262**		-1.305*		-2.839*	
	(0.774)		(1.277)		(0.710)		(1.422)	
Callable	-1.884***		-2.198***		-2.165***		-1.759***	
	(0.531)		(0.329)		(0.510)		(0.259)	
Duration	-0.215		-0.570		-0.161		-0.738	
	(0.330)		(0.965)		(0.271)		(0.979)	
Convexity	0.015		0.039		0.014		0.044	
	(0.011)		(0.034)		(0.009)		(0.035)	
Face Value	1.332***		2.056***		1.366***		2.065***	
	(0.228)		(0.598)		(0.251)		(0.602)	
Inverse Mills Ratio					1.716	0.022	2.211*	6.387***
					(1.887)	(2.461)	(1.163)	(1.609)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1559	1834	450	454	1356	1356	448	453

7. SUMMARY AND CONCLUSIONS

In this paper, I investigate how a significant change in SEC disclosure requirements affects foreign firm's decision to register U.S. bond issues, and the associated investor reaction from failing to do so. Specifically, I investigate the capital market consequences of the SEC's recent decision to allow International Financial Reporting Standards for foreign firm registrants, which was a significant change from the previous requirement that all firms report or reconcile to U.S. GAAP. The event also provides a unique exogenous shock to the registration costs of a subset of foreign firms, and allows me to test theoretical arguments predicting an increase in SEC registration and the associated negative reaction to private placements.

The research is important for several reasons. First, this study sheds light on the U.S. market for foreign bonds, which is not only an economically significant source of global financing, but due to its unique institutional details is an understudied area in the accounting literature. Second, this study suggests some capital market consequence to the SEC rule change where existing studies find no effect (Kim et al., 2012). Ongoing critical debate within both the academic and practitioner literature about the consequences of a dual reporting regime merits the study of the consequences of this regulation. Finally, the setting provides a unique setting within which to test theoretical predictions about how both firms and investors react to a change in disclosure costs (Verrecchia, 1983).

Using country level adoption of mandatory IFRS and the recent SEC rule change as plausibly exogenous shocks to foreign firm reporting requirements, I use a difference-in-difference-in-differences design and find that firms are significantly more likely to register the bonds following the SEC rule change. The effect is not only statistically

significant and robust, but economically meaningful as well. Furthermore, cross-sectional analysis suggests that this effect is strongest amongst those bonds issued from countries with already strong legal and enforcement mechanisms.

In subsequent analysis, I investigate the effect of the SEC rule change on the issuing bond's cost of debt capital and credit rating. Using an endogenous switching model to account for the fact that firms choose the market to issue into, I find no effect in the market for registered Yankee bonds, but a significant and detrimental effect on the market for Rule 144A issues. The null result within the Yankee bond market is consistent with existing studies that find no effect amongst publicly registered equity (Kim et al., 2012). However, the finding of a detrimental affect on the Rule 144A private market is unique to this paper, and reconciles to theoretical predictions that a decrease in disclosure costs leads to disclosure unraveling (Grossman and Hart, 1980; Grossman, 1981; Verrecchia, 1983).

The empirical results suggest an unraveling effect of disclosure regulation. Prior to the SEC rule change, investors could not infer that foreign firms issue into the Rule 144A market to hide bad news, because some firms avoid SEC registration only to avoid costly SEC disclosure requirements. Following the SEC rule change, which decreased the disclosure costs of registration, investors infer a greater likelihood that firms in the Rule 144A market are hiding bad news, and so offer a lower cost of debt and higher credit rating. Accordingly, more firms move to avoid this investor negative reaction by registering with the SEC.

REFERENCES

Amir, E., Harris, T. S., Venuti, E. K., 1993. A comparison of the value-relevance of US versus non-US GAAP accounting measures using form 20-F reconciliations. Journal of Accounting Research 31, 230–264.

Baber, W. R., Gore, A. K., 2008. Consequences of GAAP disclosure regulation: Evidence from municipal debt issues. The Accounting Review 83, 565–592.

Ball, R., 2006. International Financial Reporting Standards (IFRS): pros and cons for investors. Accounting and Business Research 36, 5–27.

Ball, R., Li, X., Shivakumar, L., 2015. Contractibility of Financial Statement Information Prepared under IFRS: Evidence from Debt Contracts. Working Paper: University of Chicago .

Bandyopadhyay, S. P., Hanna, J. D., Richardson, G., 1994. Capital market effects of US-Canada GAAP differences. Journal of Accounting Research 32, 262–277.

Barth, M. E., Clinch, G., 1996. International Accounting Differences and Their Relation to Share Prices: Evidence from UK, Australian, and Canadian Firms. Contemporary Accounting Research 13, 135–170.

Barth, M. E., Israeli, D., 2013. Disentangling mandatory IFRS reporting and changes in enforcement. Journal of Accounting and Economics 56, 178–188.

Bharath, S. T., Sunder, J., Sunder, S. V., 2008. Accounting quality and debt contracting. The Accounting Review 83, 1–28.

Bhat, G., Callen, J. L., Segal, D., 2014. Credit risk and IFRS: the case of credit default swaps. Journal of Accounting, Auditing & Finance 29, 1–34.

Bushee, B. J., Leuz, C., 2005. Economic consequences of SEC disclosure regulation: evidence from the OTC bulletin board. Journal of Accounting and Economics 39, 233–264.

Cameron, A. C., Trivedi, P. K., 2005. Microeconometrics: methods and applications. Cambridge University Press, Cambridge, UK.

Chaplinsky, S., Ramchand, L., 2004. The Impact of SEC Rule 144A on Corporate Debt Issuance by International Firms. The Journal of Business 77, 1073–1098.

Chen, L. H., Deng, S., Gupta, P. P., Sami, H., 2013. The SEC's Elimination of 20-F Reconciliation and the Cost of Debt. Working Paper: Villanova University, Southern Illinois University, Lehigh University .

Chen, L. H., Khurana, I. K., 2014. The Impact of Eliminating the Form 20-F Reconciliation on Shareholder Wealth: Evidence from US Cross-Listed Firms. The Accounting Review 90, 199–228.

Chen, T.-Y., Chin, C. L., Wang, S., Yao, C., 2015. The Effects of Financial Reporting on Bank Loan Contracting in Global Markets: Evidence from Mandatory IFRS Adoption. Journal of International Accounting Research 14, 45–81.

Christensen, H. B., Hail, L., Leuz, C., 2013. Mandatory IFRS reporting and changes in enforcement. Journal of Accounting and Economics 56, 147–177.

Coffee Jr, J. C., 1998. Future as history: The prospects for global convergence in corporate governance and its implications. Northwestern University Law Review 93, 641–708.

Coffee Jr, J. C., 2002. Racing towards the top?: The impact of cross-listings and stock market competition on international corporate governance. Columbia Law Review 102, 1757–1831.

Daske, H., Hail, L., Leuz, C., Verdi, R., 2008. Mandatory IFRS reporting around the world: Early evidence on the economic consequences. Journal of Accounting Research 46, 1085–1142.

Daske, H., Hail, L., Leuz, C., Verdi, R., 2013. Adopting a label: Heterogeneity in the economic consequences around IAS/IFRS adoptions. Journal of Accounting Research 51, 495–547.

Dhaliwal, D. S., Khurana, I. K., Pereira, R., 2011. Firm Disclosure Policy and the Choice Between Private and Public Debt. Contemporary Accounting Research 28, 293–330.

Djankov, S., McLiesh, C., Shleifer, A., 2007. Private credit in 129 countries. Journal of Financial Economics 84, 299–329.

Doidge, C., Karolyi, G. A., Stulz, R. M., 2004. Why are foreign firms listed in the US worth more? Journal of Financial Economics 71, 205–238.

Fenn, G. W., 2000. Speed of issuance and the adequacy of disclosure in the 144A high-yield debt market. Journal of Financial Economics 56, 383–405.

Florou, A., Kosi, U., 2013. Does Mandatory IFRS Adoption Facilitate Debt Financing? Working Paper: King's College London, Vienna University of Economics and Business .

Gao, Y., 2011. The Sarbanes-Oxley Act and the Choice of Bond Market by Foreign Firms. Journal of Accounting Research 49, 933–968.

Grossman, S. J., 1981. The informational role of warranties and private disclosure about product quality. Journal of Law and Economics 24, 461–483.

Grossman, S. J., Hart, O. D., 1980. Disclosure laws and takeover bids. Journal of Finance 35, 323–334.

Hail, L., Leuz, C., 2007. Capital market effects of mandatory IFRS reporting in the EU: Empirical evidence. Working Paper: University of Pennsylvania, University of Chicago .

Hail, L., Leuz, C., 2009. Cost of capital effects and changes in growth expectations around US cross-listings. Journal of Financial Economics 93, 428–454.

Harris, M. S., Muller, K. A., 1999. The market valuation of IAS versus US-GAAP accounting measures using Form 20-F reconciliations. Journal of Accounting and Economics 26, 285–312.

Heckman, J. J., 1976. The common structure of statistical models of truncation, sample selection and limited dependent variables and a simple estimator for such models. Annals of Economic and Social Measurement 5, 475–492.

Henry, E., Lin, S., Yang, Y., 2009. The European-US GAAP Gap: IFRS to US GAAP Form 20-F Reconciliations. Accounting Horizons 23, 121–150.

Hopkins, P. E., Botosan, C. A., Bradshaw, M. T., Callahan, C. M., Ciesielski, J., Farber, D. B., Hodder, L. D., Kohlbeck, M. J., Laux, R., Stober, T. L., et al., 2008. Response to the SEC release: Acceptance from foreign private issuers of financial statements prepared in accordance with International Financial Reporting Standards without reconciliation to US GAAP File No. S7-13-07. Accounting Horizons 22, 223–240.

Jamal, K., Benston, G. J., Carmichael, D. R., Christensen, T. E., Colson, R. H., Moehrle, S. R., Rajgopal, S., Stober, T. L., Sunder, S., Watts, R. L., 2008. A perspective on the SEC's proposal to accept financial statements prepared in accordance with International Financial Reporting Standards (IFRS) without reconciliation to US GAAP. Accounting Horizons 22, 241–248.

Jiang, J. X., Petroni, K. R., Wang, I. Y., 2010. Did eliminating the 20-F reconciliation between IFRS and US GAAP matter? Working Paper: Michigan State .

Kim, Y., Li, H., Li, S., 2012. Does eliminating the Form 20-F reconciliation from IFRS to US GAAP have capital market consequences? Journal of Accounting and Economics 53, 249–270.

Kwan, S. H., Carleton, W. T., 2010. Financial contracting and the choice between private placement and publicly offered bonds. Journal of Money, Credit and Banking 42, 907–929.

La Porta, R., Lopez-de Silanes, F., Shleifer, A., 2006. What works in securities laws? The Journal of Finance 61, 1–32.

La Porta, R., Lopez-de Silanes, F., Shleifer, A., Vishny, R. W., 1997. Legal determinants of external finance. Journal of Finance 52, 1131–1150.

Latham & Watkins LLP, 2013. Accessing the US capital markets from outside the United States. Latham & Watkins LLP, London, UK.

Lennox, C. S., Francis, J. R., Wang, Z., 2011. Selection models in accounting research. The Accounting Review 87, 589–616.

Leuz, C., 2003. IAS versus US GAAP: information asymmetry–based evidence from Germany's new market. Journal of Accounting Research 41, 445–472.

Leuz, C., Triantis, A., Wang, T. Y., 2008. Why do firms go dark? Causes and economic consequences of voluntary SEC deregistrations. Journal of Accounting and Economics 45, 181–208.

Leuz, C., Verrecchia, R. E., 2000. The economic consequences of increased disclosure. Journal of Accounting Research 38, 91–124.

Leuz, C., Wysocki, P. D., 2008. Economic consequences of financial reporting and disclosure regulation: A review and suggestions for future research. Working Paper: University of Chicago, University of Miami .

Li, K., Prabhala, N. R., 2005. Self-selection models in corporate finance. Working Paper: University of British Columbia, University of Maryland .

Licht, A. N., 2003. Cross-listing and corporate governance: bonding or avoiding. Chicago Journal of International Law 4, 141–165.

Maddala, G. S., 1986. Limited-dependent and qualitative variables in econometrics. Cambridge University Press, Cambridge, UK.

Milgrom, P. R., 1981. Good news and bad news: Representation theorems and applications. The Bell Journal of Economics 12, 380–391.

Miller, D. P., Puthenpurackal, J. J., 2002. The costs, wealth effects, and determinants of international capital raising: Evidence from public yankee bonds. Journal of Financial Intermediation 11, 455–485.

Pope, P. F., 1993. Discussion of a comparison of the value-relevance of US versus non-US GAAP accounting measures using Form 20-F reconciliations. Journal of Accounting Research 31, 265–275.

Qi, Y., Roth, L., Wald, J. K., 2010. Political rights and the cost of debt. Journal of Financial Economics 95, 202–226.

Rees, L., Elgers, P., 1997. The market's valuation of nonreported accounting measures: Retrospective reconciliations of non-US and US GAAP. Journal of Accounting Research 35, 115–127.

Reese, W. A., Weisbach, M. S., 2002. Protection of minority shareholder interests, cross-listings in the United States, and subsequent equity offerings. Journal of Financial Economics 66, 65–104.

Roy, A. D., 1951. Some thoughts on the distribution of earnings. Oxford Economic Papers 3, 135–146.

Verrecchia, R. E., 1983. Discretionary disclosure. Journal of Accounting and Economics 5, 179–194.

Wooldridge, J. M., 2010. Econometric analysis of cross section and panel data. MIT press, Boston, MA.

Yu, Y., 2011. The Interaction of Voluntary and Mandatory Disclosures: Evidence from the SEC's Elimination of the IFRS-US GAAP Reconciliation. Ph.D. thesis, University of Georgia.

APPENDIX A

VARIABLE DEFINITIONS

Main Variables of Interest

SEC Registered: Binary variable set equal to one if Mergent FISD identifies the bond as a foreign issue registered with the SEC, and equal to zero otherwise

Mandatory IFRS: Binary variable equal to one if the bond's country of origin requires mandatory IFRS reporting in the same year as the bond issue, and zero otherwise

Cost of Debt: Calculated as the bond yield minus the risk-free rate from a corresponding U.S. Treasury security of similar maturity. The bond yield is calculated from the bond's issue price, coupon rate, and term. The risk free rate is obtained from the Federal Reserve's H.15 daily report.

Bond Rating: Average bond rating from each of the three bond rating agencies: Moody's, Fitch, and Standard & Poor's. Bond ratings are converted to a numerical value ranging from zero to 21, following Qi et al. (2010).

Post: A binary variable equal to one if the bond issue date is in calendar year 2008 or later, and equal to zero otherwise.

Bond Characteristic Controls

Face Value: Offering amount of the bond at maturity, scaled by $1,000,000.

Floating Coupon: Binary variable equal to one if the bond's coupon rate periodically resets, and equal to zero if the coupon rate is fixed over the bond term.

Putable: Binary variable equal to one if the purchaser of the bond retains a put option, and equal to zero otherwise

Callable: Binary variable equal to one if the bond can be called by the issuer, and equal to zero otherwise.

Duration: The modified duration of the bond, calculated as:

$$Duration = \frac{1}{n} \frac{\sum_k^K t_k \frac{c(k)}{(1+\frac{y}{n})^{k \cdot t}}}{P(1+\frac{y}{n})}$$

where A is the par value, c is the coupon rate, n is the number of coupon payments per year, K is the number of coupon payments remaining, and y is the bond's yield to maturity, $t_k = n+k-1$, $c(k) = (c/n)A$ for $k = 1, ..., K-1$, and $c(K) = (1+\frac{c}{n})A$.

Convexity: Bond convexity is calculated as:

$$Convexity = \frac{1}{n} \frac{\sum_{k=1}^K t_k \frac{c(k)}{(1+\frac{y}{n})^{t_k}}}{P(1+\frac{y}{n})^2}$$

where $t_k = k-(1-n)$, $c(k) = \frac{c}{n}A$ for $k = 1, ..., K-1$, and $c(K) = (1+\frac{c}{n})A$, and where $P = \sum_{k=1}^K \frac{c(k)}{(1+y)^{t_k}}$

Country Level Characteristics

English Legal Origin: Binary variable equal to one if the issuing country's legal origin is English, and equal to zero otherwise, obtained from Djankov et al. (2007).

Creditor Rights: Variable ranges from zero to four, increasing in the strength of the issuing country's creditor rights, as identified by La Porta et al. (1997) and obtained from Djankov et al. (2007).

Disclosure Requirements: Obtained from La Porta et al. (2006).

Firm Specific Control Variables

Firm Size: Calculated as the log of total assets, converted to US Dollars, using the most recent financial statement information before the bond issue, as obtained from Compustat Global.

MTB: Market-to-Book, calculated using the most recent financial statement information before the bond issue, obtained from Compustat Global.

ROA: Return-on-Assets, calculated using the most recent financial statement information before the bond issue, obtained from Compustat Global.